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EXAMINER
SHERMAN, STEPHEN G

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/608,100	KIM, HONG CHUL
	Examiner	Art Unit
	Stephen G. Sherman	2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 30 June 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Paragraph [0015] of the specification reads: "In view of the above, it generally more difficult to uniformly control of the FLC material exhibiting the bistable than to uniformly control of the FLC material exhibiting the monostable state." The examiner suggests changing the sentence to read: "In view of the above, it is generally more difficult to uniformly control the FLC material exhibiting the bistable than to uniformly control the FLC material exhibiting the monostable state."

Paragraph [0035] pf the specification reads: "In one aspect of the present invention, the FLC material may be initially aligned it the presence of the applied electric field..." The examiner suggests changing the sentence to read: "In one aspect of the present invention, the FLC material may be initially aligned in the presence of the applied electric field..."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-3, 6-7, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132) in view of Koma et al. (US 6,927,825).

Regarding claim 1, Choi et al. disclose a method of aligning ferroelectric liquid crystal material in the presence of an applied electric field, comprising: providing a liquid crystal display (LCD) panel having a plurality of gate lines (Figure 10, item 232), a plurality of data lines (Figure 10, items 231), and a plurality of ferroelectric liquid crystal (FLC) cells; providing FLC material within the FLC cells (Figure 8, item 205); applying an electric field to the FLC cells to impart an initial alignment to the provided FLC material (Paragraph [0063]); providing a data drive circuit for driving the plurality of data lines (It is inherent to provide a data drive circuit in a liquid crystal display); providing a gate drive circuit for driving the plurality of gate lines (It is inherent to provide a gate drive circuit in a liquid crystal display); providing a source printed circuit board (PCB) connected to the LCD panel through the data drive circuit (Figure 10, items 217a-217e), wherein the source PCB includes a common voltage terminal (Figure 10, item 217a)

and a ground voltage terminal (Paragraph [0066]); providing a gate PCB connected to the LCD panel through the gate drive circuit (Figure 10, items 216a-216d), wherein the gate PCB includes a common voltage terminal (Figure 10, 215a) and a ground voltage terminal (Paragraph [0066]). Choi et al. fail to teach a method of aligning the initially aligned FLC material, the aligning comprising: applying a first voltage to the common voltage terminal on the source PCB; applying a second voltage to the ground voltage terminal on the source PCB simultaneously with the first voltage to the common voltage terminal on the source PCB; applying the first voltage to the common voltage terminal formed on the gate PCB; and applying the second voltage to the ground terminal formed on the gate PCB simultaneously with the first voltage to the common voltage terminal formed on the gate PCB. Koma et al. disclose a method of aligning the initially aligned FLC material, the aligning comprising: applying a first voltage to the common voltage terminal on the source PCB (Column 3, lines 50-57. The examiner interprets that applying a voltage to the common electrode would apply the voltage to the common voltage terminal on the source PCB.); applying a second voltage to the ground voltage terminal on the source PCB simultaneously with the first voltage to the common voltage terminal on the source PCB (The examiner interprets that applying 0 volts to the ground terminal of the source PCB would be a second voltage and that 0 volts would be applied to the ground voltage terminal at the same time as the first voltage to the common voltage terminal); applying the first voltage to the common voltage terminal formed on the gate PCB (Column 3, lines 50-57. The examiner interprets that applying a voltage to the common electrode would apply the voltage to the common voltage terminal on

the gate PCB.); and applying the second voltage to the ground terminal formed on the gate PCB simultaneously with the first voltage to the common voltage terminal formed on the gate PCB (The examiner interprets that applying 0 volts to the ground terminal of the gate PCB would be a second voltage and that 0 volts would be applied to the ground voltage terminal at the same time as the first voltage to the common voltage terminal). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide a method of aligning ferroelectric liquid crystals using the common and ground voltage terminals.

Regarding claim 2, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. also discloses wherein providing the FLC material includes injecting the FLC material (Paragraph [0011]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide the FLC material in the display.

Regarding claim 3, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1, wherein providing the FLC material includes dispensing the FLC material (It would be inherent to provide the FLC material by dispensing it). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide the FLC material in the display.

Regarding claim 6, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. also disclose

wherein the FLC cell includes Half V-switching Mode FLC material (Paragraph [0011]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide an FLC cell in which the transmittance would only increase as either positive or negative voltages are applied depending on what polarity of electric field was used in the initial alignment.

Regarding claim 7, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. also disclose wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material transforms from a nematic phase to a smectic C phase (Paragraphs [0013] and [0014]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide the FLC material with a uniform alignment state.

Regarding claim 10, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to the gate lines upon aligning the claim 1. Koma et al. also disclose wherein substantially no voltage is applied to initially aligned FLC material (Column 9, lines 16-21. The examiner interprets that since the gate electrode would be grounded that no voltage would be supplied to the gate lines.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings to Choi et al. and Koma et al. in order to prevent any display information from being supplied to the pixels during alignment of the FLC.

Regarding claim 12, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Koma et al. also disclose wherein a common power voltage is not applied to the source PCB upon aligning the initially aligned FLC material (Column 9, lines 16-21. The examiner interprets that if the source electrode is grounded that a common power voltage would not be supplied to the source PCB during alignment.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings to Choi et al. and Koma et al. in order to allow for the alignment of the FLC material without supplying a voltage to the source PCB in order to put the source circuit in a floating state.

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132) and Koma et al. (US 6,927,825) and further in view of Choi et al. (US 6,760,088).

Regarding claim 4, Choi et al. (US 2002/0085132) and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. (US 2002/0085132) and Koma et al. fail to teach the method of aligning ferroelectric crystal material wherein the initial alignment of the FLC material is deteriorated prior to aligning the initially aligned FLC material. Choi et al. (US 6,760,088) disclose the method of aligning ferroelectric crystal material wherein the initial alignment of the FLC material is deteriorated prior to aligning the initially aligned FLC material (Column 5, lines 31-35). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. (US 2002/0085132), Koma et al. and Choi et al.

(US 6,760,088) in order to realign the liquid crystal material if the initial alignment has been disturbed.

Regarding claim 5, Choi et al. (US 2002/0085132), Koma et al. and Choi et al. (US 6,760,088) disclose the method of aligning ferroelectric liquid crystal material according to claim 4. Choi et al. (US 6,760,088) also disclose the method of aligning ferroelectric crystal material wherein aligning the initially aligned FLC material substantially restores the initial alignment of the FLC material (Column 5, lines 31-35). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. (US 2002/0085132), Koma et al. and Choi et al. (US 6,760,088) in order to realign the liquid crystal material if the initial alignment has been disturbed.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132) and Koma et al. (US 6,927,825) and further in view of Kondoh (US 6,710,759).

Regarding claim 8, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. and Koma et al. fail to teach the method of aligning ferroelectric crystal material wherein the first voltage is greater than the second voltage. Kondoh discloses the method of aligning ferroelectric crystal material wherein the first voltage is greater than the second voltage (Figure 6. The examiner interprets that the Sw time period during the Rs time period to be when the ferroelectric crystal is aligned and during this period the voltage, (V) can be seen to

be at one time positive. Since the examiner already interpreted the voltage applied to the ground voltage terminal to be 0, the first voltage applied during the alignment of the ferroelectric liquid crystals would be greater than the second.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Koma et al. and Kondoh in order to allow for the selection between the different molecular arrangements of the FLC.

Regarding claim 9, Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. and Koma et al. fail to teach of the method of aligning ferroelectric crystal wherein the second voltage is greater than the first voltage. Kondoh discloses the method of aligning ferroelectric crystal wherein the second voltage is greater than the first voltage (Figure 6. The examiner interprets that the Sw time period during the Rs time period to be when the ferroelectric crystal is aligned and during this period the voltage, (V) can be seen to be at one time negative. Since the examiner already interpreted the voltage applied to the ground voltage terminal to be 0, the second voltage applied during the alignment of the ferroelectric liquid crystals would be greater than the first.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Koma et al. and Kondoh in order to allow for the selection between the different molecular arrangements of the FLC.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132) and Koma et al. (US 6,927,825) and further in view of Lee et al.

(US 2004/0246388). Choi et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 1. Choi et al. and Koma et al. fail to teach the method of aligning ferroelectric liquid crystal material further comprising providing the gate lines in a floating state upon aligning the initially aligned FLC material. Lee et al. disclose the method of aligning ferroelectric liquid crystal material further comprising providing the gate lines in a floating state upon aligning the initially aligned FLC material (Paragraph [0054]. The examiner interprets that if the pixel electrodes are kept in a floating state because no voltage is received from the gate or source driver, that the gate lines would also be in a floating state.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Koma et al. and Lee et al. in order to ensure that no voltage would be supplied to the pixels from the gate lines while alignment was taking place.

8. Claims 13, 16-18, 20, 22-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132) in view of Lee et al. (US 2004/0169629) and further in view of Koma et al. (US 6,927,825).

Regarding claim 13, Choi et al. disclose a method of aligning ferroelectric liquid crystal material display panels comprising: providing a liquid crystal display (LCD) panel having a plurality of gate lines (Figure 10, item 232), a plurality of data lines (Figure 10, item 231), and a plurality of liquid crystal cells containing initially aligned ferroelectric liquid crystal (FLC) material (Figure 8, item 205). Choi et al. fails to teach of setting an analog gamma voltage substantially equal to a first voltage, wherein the analog gamma

voltage is set independently of a gray scale value of a digital video data; and applying the first voltage to the plurality of data lines. Lee et al. disclose setting an analog gamma voltage substantially equal to a first voltage, wherein the analog gamma voltage is set independently of a gray scale value of a digital video data; and applying the first voltage to the plurality of data lines (Paragraph [0014]. The examiner interprets that the gamma voltage would be a first voltage and that "selecting a gamma voltage at a gray level other than the intermediate gray level" means that the gamma voltage is set independently of a gray scale value.), and wherein the second voltage is different from the first voltage (Figure 5, items 220 (first voltage generator) and 300 (second voltage generator) have different outputs for different voltage values.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Lee et al. in order to create a FLC display panel that would provide an analog gamma voltage to the data lines. Choi et al. and Lee et al. fail to teach aligning the initially aligned FLC material by applying a second voltage to a common electrode of the LCD panel, wherein the second voltage is different from the first voltage. Koma et al. disclose aligning the initially aligned FLC material by applying a second voltage to a common electrode of the LCD panel (Column 3, lines 50-57). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Lee et al. and Koma et al. in order to create a FLC display panel in which the gamma voltage applied to the data lines and the voltage used to align the FLC material are different.

Regarding claim 16, Choi et al., Lee et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 13. Choi et al. also disclose wherein the FLC cell includes Half V-switching Mode FLC material (Paragraph [0011]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide an FLC cell in which the transmittance would only increase as either positive or negative voltages are applied depending on what polarity of electric field was used in the initial alignment.

Regarding claim 17, Choi et al., Lee et al., and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 13. Choi et al. also disclose wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material transforms from a nematic phase to a smectic C phase (Paragraphs [0013] and [0014]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide the FLC material with a uniform alignment state.

Regarding claim 18, Choi et al., Lee et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 13. Koma et al. also disclose wherein substantially no voltage is applied to the plurality of gate lines upon aligning the initially aligned FLC material (Column 9, lines 16-21. The examiner interprets that since the gate electrode would be grounded that no voltage would be supplied to the gate lines.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings to Choi et al. and Koma et al. in order to

prevent any display information from being supplied to the pixels during alignment of the FLC.

Regarding claim 20, Choi et al. disclose a ferroelectric liquid crystal display, comprising: a liquid crystal display (LCD) panel having a plurality of gate lines (Figure 10, item 232), a plurality of data lines (Figure 10, items 231), a plurality of ferroelectric liquid crystal (FLC) cells containing FLC material having an initial alignment (Figure 8, item 205), and a common electrode (Figure 8, item 212); a source printed circuit board (PCB) including a ground voltage terminal (Paragraph [0066]) for applying a first voltage and a common voltage terminal (Figure 10, item 215a) for applying a second voltage; a data driving circuit for driving the plurality of data lines (It is inherent to have a data driving circuit in a LCD panel), wherein the LCD panel is electrically connected to the source PCB via the data driving circuit (Figure 10, items 217a-217e). Choi et al. fail to teach of a gamma circuit for generating a substantially uniform voltage independent of a gray scale value of a digital video data using the first voltage, wherein the first voltage is transmittable to the plurality of data lines via the data driving circuit upon an alignment of the initially aligned FLC material. Lee et al. disclose a gamma circuit for generating a substantially uniform voltage independent of a gray scale value of a digital video data using the first voltage, wherein the first voltage is transmittable to the plurality of data lines via the data driving circuit upon an alignment of the initially aligned FLC material (Paragraph [0014]. The examiner interprets that the gamma voltage would be a first voltage and that "selecting a gamma voltage at a gray level other than the intermediate gray level" means that the gamma voltage is set independently of a gray scale value.).

Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Lee et al. in order to create a FLC display panel that would provide an analog gamma voltage to the data lines. Choi et al. and Lee et al. fail to teach of a common electrode driving circuit for applying the second voltage to the common electrode upon the alignment of the initially aligned FLC material. Koma et al. disclose a common electrode driving circuit for applying the second voltage to the common electrode upon the alignment of the initially aligned FLC material (Column 3, lines 50-57). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Lee et al. and Koma et al. in order to create a FLC display panel in which the gamma voltage applied to the data lines and the voltage used to align the FLC material are different.

Regarding claim 22, Choi et al., Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20. Choi et al. also discloses wherein the FLC cell includes Half-switching Mode FLC material (Paragraph [0011]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide an FLC cell in which the transmittance would only increase as either positive or negative voltages are applied depending on what polarity of electric field was used in the initial alignment.

Regarding claim 23, Choi et al., Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20, wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material

transforms from a nematic phase to a smectic C phase (Paragraphs [0013] and [0014]). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. and Koma et al. in order to provide the FLC material with a uniform alignment state.

Regarding claim 26, Choi et al., Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20, further comprising a gate driving circuit for driving the plurality of gate lines. Koma et al. also disclose wherein substantially no voltage is appliable to the gate lines in the presence of the applied first and second voltages (Column 9, lines 16-21. The examiner interprets that since the gate electrode would be grounded that no voltage would be supplied to the gate lines.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings to Choi et al. and Koma et al. in order to prevent any display information from being supplied to the pixels during alignment of the FLC.

9. Claims 14-15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132), Lee et al. (US 2004/0169629) and Koma et al. (US 6,927,825) and further in view of Choi et al. (6,760,088).

Regarding claim 14, Choi et al. (US 2002/0085132), Lee et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 13. Choi et al. (US 2002/0085132), Lee et al. and Koma et al. fail to teach the method of aligning ferroelectric liquid crystal material wherein the initial alignment of the FLC material is deteriorated prior to aligning the initially aligned FLC material. Choi et al.

(6,760,088) disclose the method of aligning ferroelectric liquid crystal material wherein the initial alignment of the FLC material is deteriorated prior to aligning the initially aligned FLC material (Column 5, lines 31-35). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. (US 2002/0085132), Lee et al., Koma et al. and Choi et al. (US 6,760,088) in order to realign the liquid crystal material if the initial alignment has been disturbed.

Regarding claim 15, Choi et al. (US 2002/0085132), Lee et al. and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 14. Choi et al. (US 2002/0085132), Lee et al. and Koma et al. fail to teach the method of aligning ferroelectric liquid crystal material wherein aligning the initially aligned FLC material substantially restores the initial alignment of the FLC material. Choi et al. (US 6,760,088) discloses the method of aligning ferroelectric liquid crystal material wherein aligning the initially aligned FLC material substantially restores the initial alignment of the FLC material (Column 5, lines 31-35). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. (US 2002/0085132), Lee et al., Koma et al. and Choi et al. (US 6,760,088) in order to realign the liquid crystal material if the initial alignment has been disturbed.

Regarding claim 21, Choi et al. (US 2002/0085132), Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20. Choi et al. (US 2002/0085132), Lee et al. and Koma et al. fail to teach the ferroelectric liquid crystal display wherein an alignment of the initially aligned FLC material is restorable in the presence of the first and second voltages. Choi et al. (US 6,760,088) discloses the

ferroelectric liquid crystal display wherein an alignment of the initially aligned FLC material is restorable in the presence of the first and second voltages (Column 5, lines 31-35). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al. (US 2002/0085132), Lee et al., Koma et al. and Choi et al. (US 6,760,088) in order to realign the liquid crystal material to the initial alignment.

10. Claims 19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132), Lee et al. (US 2004/0169629) and Koma et al. (US 6,927,825) and further in view of Lee et al. (US 2004/0246388).

Regarding claim 19, Choi et al., Lee et al. (US 2004/0169629) and Koma et al. disclose the method of aligning ferroelectric liquid crystal material according to claim 13. Choi et al., Lee et al. (US 2004/0169629) and Koma et al. fail to teach the method of aligning ferroelectric liquid crystal material further comprising providing the gate lines in a floating state upon aligning the initially aligned FLC material. Lee et al. (US 2004/0246388) discloses the method of aligning ferroelectric liquid crystal material further comprising providing the gate lines in a floating state upon aligning the initially aligned FLC material (Paragraph [0054]. The examiner interprets that if the pixel electrodes are kept in a floating state because no voltage is received from the gate or source driver, that the gate lines would also be in a floating state.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Lee et al. (US 2004/0169629), Koma et al. and Lee et al. (US 2004/0246388) in

order to ensure that no voltage would be supplied to the pixels from the gate lines while alignment was taking place.

Regarding claim 27, Choi et al., Lee et al. (US 2004/0169629) and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20. Choi et al., Lee et al. (US 2004/0169629) and Koma et al. fail to teach the ferroelectric liquid crystal display wherein the gate lines are provided in a floating state in the presence of the applied first and second voltages. Lee et al. (US 2004/0246388) disclose the ferroelectric liquid crystal display wherein the gate lines are provided in a floating state in the presence of the applied first and second voltages (Paragraph [0054]. The examiner interprets that if the pixel electrodes are kept in a floating state because no voltage is received from the gate or source driver, that the gate lines would also be in a floating state.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Lee et al. (US 2004/0169629), Koma et al. and Lee et al. (US 2004/0246388) in order to ensure that no voltage would be supplied to the pixels from the gate lines while alignment was taking place.

11. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US 2002/0085132), Lee et al. (US 2004/0169629) and Koma et al. (US 6,927,825) and further in view of Kondoh (US 6,710,759).

Regarding claim 24, Choi et al., Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20. Choi et al., Lee et al. and Koma et al. fail to teach the ferroelectric liquid crystal display wherein the first voltage is

greater than the second voltage. Kondoh discloses the ferroelectric liquid crystal display wherein the first voltage is greater than the second voltage (Figure 6. The examiner interprets that the Sw time period during the Rs time period to be when the ferroelectric crystal is aligned and during this period the voltage, (V) can be seen to be at one time negative. Since the examiner already interpreted the voltage applied to the ground voltage terminal to be 0, the first voltage applied during the alignment of the ferroelectric liquid crystals would be greater than the second.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Koma et al. and Kondoh in order to allow for the selection between the different molecular arrangements of the FLC.

Regarding claim 25, Choi et al., Lee et al. and Koma et al. disclose the ferroelectric liquid crystal display according to claim 20. Choi et al., Lee et al. and Koma et al. fail to teach the ferroelectric liquid crystal wherein the second voltage is greater than the first voltage. Kondoh discloses the ferroelectric liquid crystal wherein the second voltage is greater than the first voltage (Figure 6. The examiner interprets that the Sw time period during the Rs time period to be when the ferroelectric crystal is aligned and during this period the voltage, (V) can be seen to be at one time positive. Since the examiner already interpreted the voltage applied to the ground voltage terminal to be 0; the second voltage applied during the alignment of the ferroelectric liquid crystals would be greater than the first.). Therefore it would have been obvious to "one of ordinary skill" in the art to combine the teachings of Choi et al., Koma et al. and

Kondoh in order to allow for the selection between the different molecular arrangements of the FLC.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SS

6 September 2005

REGINA LIANG
PRIMARY EXAMINER